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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

YAM, STEPHEN K

ART UNIT PAPER NUMBER

2878

DATE MAILED: 06/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/825,273

Applicant(s)

ENGELHARDT ET AL.

Examiner

Stephen Yam

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on 18 April 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1,6,12-15,18,24-30 and 37 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,6,18,24-30 and 37 is/are rejected.
- 7) ☐ Claim(s) 12-15 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on April 18, 2003 has been entered. Claims 1, 6, 12-15, 18, 24-30, and 37 are still pending.

### ***Claim Objections***

2. Claims 12, 18, and 37 are objected to because of the following informalities:

In Claim 12, line 3, "a characteristic property" lacks proper antecedent basis.

In Claim 18, line 2, "a first laser sources" should be replaced with "a first laser source".

In Claim 18, line 6, "the second and the third beams" should be replaced with "the second and the third laser beams" to provide antecedent basis.

In Claim 37, line 3, "a first laser sources" should be replaced with "a first laser source".

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 18, 24-29, and 37 are rejected under 35 U.S.C. 102(b) as being anticipated by Abrams et al. US Patent No. 4,757,268.

Regarding Claim 18, Abrams et al. teach (see Fig. 1) an apparatus for combining light comprising a first laser source (30) defining a first laser beam (40) serving as a master beam (see Col. 5, lines 19-21), a beam splitter (60) for splitting the first laser beam into a second laser beam (42 into  $A_1$ ) and a third laser beam (42 into  $A_2$ ), the second laser beam being coupled into a second laser source ( $A_1$ ), the third laser beam being coupled into a third laser source ( $A_2$ ), the second and third laser beams serving to synchronize emitted light from the second and third laser sources, the emitted light being coherent (a "laser" inherently emits coherent light) and having a fixed phase relationship (see Col. 7, lines 40-58), and phase modification means (80) for modification of the fixed phase relationship of the emitted light outputting the emitted light to reflecting means (70) (see Fig. 2a and Col. 7, lines 27-30) for combination.

Regarding Claim 24, Abrams et al. teach (see Fig. 1) an apparatus for combining light comprising a first light source (30), means (60) for dividing the light (40) from the first light source into a plurality of partial beams (42), the light from the first light source serving to synchronize stimulated emission of a plurality of laser light sources (20) (see Col. 5, lines 14-21), the plurality of laser light sources wherein the light of each partial beam is coupled into one of the plurality of the laser light sources and wherein the light from the plurality of laser light sources is coherent (a "laser" inherently emits coherent light) and has approximately the same wavelength (see Col. 6, lines 32-35), and a plurality of beam combining means (70, 80) ((70)

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broken up into (160) and (164)- see Fig. 2a and Col. 7, lines 27-30) which combine the light emitted from the plurality of the laser light sources largely lossless (see Col. 7, lines 22-25 and 40-42), and wherein the combination of the light is accomplished with reference to a characteristic property of the light (see Col. 7, lines 52-55).

Regarding Claim 25, Abrams et al. teach the characteristic property of the light as phase (see Col. 7, lines 52-55).

Regarding Claim 26, Abrams et al. teach the plurality of beam combining means performing beam combination in accordance with the time reversal (see Col. 7, lines 40-46) of a beam division at an interface (80).

Regarding Claim 27, Abrams et al. teach an optical diode (90, 92) to prevent light from reflecting back to the first light source (see Col. 8, lines 37-51).

Regarding Claim 28, Abrams et al. teach the optical diode as a Faraday rotator (see Col. 8, lines 43-46).

Regarding Claim 29, Abrams et al. teach a phase modification means (80) disposed before or after each laser light source for matching the phase of the individual laser light sources (see Col. 7, lines 40-58, particularly lines 52-55).

Regarding Claim 37, Abrams et al. teach (see Fig. 1) a beam combining apparatus comprising a first laser source (30) defining a first laser beam (40) serving as a master beam (see Col. 5, lines 19-21), a beam splitter (60) for splitting the first laser beam into a second laser beam (42 into  $A_1$ ) and a third laser beam (42 into  $A_2$ ), the second laser beam being coupled into a second laser source ( $A_1$ ), the third laser beam being coupled into a third laser source ( $A_2$ ), the second and third laser beams serving to synchronize emitted light from the second and third laser

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sources, the emitted light being coherent (a "laser" inherently emits coherent light) and having a fixed phase relationship (see Col. 7, lines 40-58), and phase modification means (80) for modification of the fixed phase relationship of the emitted light outputting the emitted light to reflecting means (70) (see Fig. 2a and Col. 7, lines 27-30) for combination. As the body of the claim has no support or particulars regarding a "confocal scanning microscope", the preamble is not given patentable weight.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 6, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiirono  
US Patent No. 5,048,030.

Hiirono teaches (see Fig. 5) an apparatus for combining light comprising at least one beam combining unit (40) provided as a double-refracting optical element (inherently, a Wollaston prism is a double-refracting optical element), a first laser source (10A) emitting a first laser beam ("e") having a first polarization direction and a second laser source (10B) emitting a second laser beam having a second polarization direction, the first polarization direction conforming to that of an extraordinary beam (see Col. 11, lines 43-46) of the beam combining unit and the second polarization direction conforming to that of an ordinary beam (see Col. 11, lines 43-46) of the beam combining unit, wherein the beam combining unit combines the first light beam and the

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second light beam and wherein the combination of the first and second light beams is accomplished with reference to at least one characteristic property (polarization) of the first and second light beams. Regarding Claim 6, Hiiron teaches the apparatus further comprising an optical diode (18) (see Col. 8, lines 42-44) (a Faraday rotator is an optical diode, as defined by Applicant in Page 7, paragraph 2 of the specification). Regarding Claim 30, since the body of the claim has no support or particulars regarding a "confocal scanning microscope", the preamble is not given patentable weight. Hiiron does not teach the specific wavelengths of the first and second light beams or the beam combining unit as largely lossless. It is well known in the art for an optical amplifier to combine beams of the same wavelength and for a beam combining unit to be largely lossless, to provide constructive interference to maximize output intensity. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use beams having "approximately" the same wavelength and provide the beam combining unit as "largely" lossless in the apparatus of Hiiron, to provide maximum optical intensity for the laser output, as desired in an optical amplifier.

*Allowable Subject Matter*

7. Claims 12-15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and correction of the objection of Claim 12 is provided.

8. The following is a statement of reasons for the indication of allowable subject matter:

Regarding Claims 12-15, the apparatus as claimed, specifically in combination with pulsed light sources defining a pulse profile over time as the characteristic property for combining two polarized light beams, is not disclosed or made obvious by the prior art of record.

***Response to Arguments***

9. Applicant's arguments with respect to claims 1, 6, 12-15, 18, 24-30, and 37 have been considered but are moot in view of the new ground(s) of rejection.


***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen Yam whose telephone number is (703)306-3441. The examiner can normally be reached on Monday-Friday 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on (703)308-4852. The fax phone numbers for the organization where this application or proceeding is assigned are (703)308-7724 for regular communications and (703)308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

SY  
May 20, 2003

  
**DAVID PORTA**  
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